Vegetable data

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

In [2]:

```
train_datagen=ImageDataGenerator(rescale=1./255,zoom_range=0.2,horizontal_f
lip=True,vertical_flip=False)
```

In [3]:

```
test_datagen=ImageDataGenerator(rescale=1./255)
```

In [6]:

```
x_train=train_datagen.flow_from_directory('/content/drive/MyDrive/Classroom
/Dataset Plant Disease/Veg-dataset/Veg-dataset/train_set',

class_mode='categorical',batch_size=24)
```

```
Found 10410 images belonging to 9 classes.
```

In [7]:

```
x_test=test_datagen.flow_from_directory('/content/drive/MyDrive/Classroom/D
ataset Plant Disease/fruit-dataset/fruit-dataset/train',
class_mode='categorical',batch_size=24)
```

```
Found 56 images belonging to 6 classes.
```

In [8]:

```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import
Dense,Convolution2D,MaxPooling2D,Flatten
```

In [9]:

```
model=Sequential()
```

In [10]:

```
model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu')
)
```

In [11]:

```
model.add(MaxPooling2D(pool_size=(2,2)))
```

In [12]:

```
model.add(Flatten())
```

In [13]:

```
model.summary()
```

```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d (Conv2D)             (None, 126, 126, 32)      896

 max_pooling2d (MaxPooling2D  (None, 63, 63, 32)       0
 )

 flatten (Flatten)           (None, 127008)            0

=================================================================
Total params: 896
Trainable params: 896
Non-trainable params: 0
_________________________________________________________________
```

In [14]:

```
model.add(Dense(300,activation='relu'))
model.add(Dense(150,activation='relu'))
```

In [15]:

```
model.add(Dense(9,activation='softmax'))
```

In [16]:

```
model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['ac
curacy'])
```

In [17]:

```
len(x_train)
```

Out[17]:

```
434
```

In [18]:

```
1238/24
```

Out[18]:

```
51.583333333333336
```

In [20]:

```
model.fit(x_train,steps_per_epoch=len(x_train),validation_data=x_test,valid
ation_steps=len(x_test),epochs=10)
```

```
Epoch 1/10
---------------------------------------------------------------------------
InvalidArgumentError                      Traceback (most recent call last)
 in
----> 1 model.fit(x_train,steps_per_epoch=len(x_train),validation_data=x_te
st,validation_steps=len(x_test),epochs=10)

/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py in er
ror_handler(*args, **kwargs)
     65     except Exception as e:  # pylint: disable=broad-except
     66       filtered_tb = _process_traceback_frames(e.__traceback__)
---> 67       raise e.with_traceback(filtered_tb) from None
     68     finally:
     69       del filtered_tb

/usr/local/lib/python3.7/dist-packages/tensorflow/python/eager/execute.py i
n quick_execute(op_name, num_outputs, inputs, attrs, ctx, name)
     53     ctx.ensure_initialized()
     54     tensors = pywrap_tfe.TFE_Py_Execute(ctx._handle, device_name, o
p_name,
---> 55                                         inputs, attrs, num_outputs)
     56   except core._NotOkStatusException as e:
     57     if name is not None:

InvalidArgumentError: Graph execution error:

Detected at node 'sequential/flatten/Reshape' defined at (most recent call
last):
    File "/usr/lib/python3.7/runpy.py", line 193, in _run_module_as_main
      "__main__", mod_spec)
    File "/usr/lib/python3.7/runpy.py", line 85, in _run_code
      exec(code, run_globals)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py", li
ne 16, in
```

```
      app.launch_new_instance()
    File "/usr/local/lib/python3.7/dist-packages/traitlets/config/applicati
on.py", line 846, in launch_instance
      app.start()
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelapp.py", l
ine 612, in start
      self.io_loop.start()
    File "/usr/local/lib/python3.7/dist-packages/tornado/platform/asyncio.p
y", line 132, in start
      self.asyncio_loop.run_forever()
    File "/usr/lib/python3.7/asyncio/base_events.py", line 541, in run_fore
ver
      self._run_once()
    File "/usr/lib/python3.7/asyncio/base_events.py", line 1786, in _run_on
ce
      handle._run()
    File "/usr/lib/python3.7/asyncio/events.py", line 88, in _run
      self._context.run(self._callback, *self._args)
    File "/usr/local/lib/python3.7/dist-packages/tornado/ioloop.py", line 7
58, in _run_callback
      ret = callback()
    File "/usr/local/lib/python3.7/dist-packages/tornado/stack_context.py",
line 300, in null_wrapper
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1233
, in inner
      self.run()
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1147
, in run
      yielded = self.gen.send(value)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 365, in process_one
      yield gen.maybe_future(dispatch(*args))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 268, in dispatch_shell
      yield gen.maybe_future(handler(stream, idents, msg))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 545, in execute_request
      user_expressions, allow_stdin,
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/ipkernel.py", li
ne 306, in do_execute
      res = shell.run_cell(code, store_history=store_history, silent=silent
)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/zmqshell.py", li
ne 536, in run_cell
      return super(ZMQInteractiveShell, self).run_cell(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 2855, in run_cell
```

```
      raw_cell, store_history, silent, shell_futures)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 2881, in _run_cell
      return runner(coro)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/async_helpers
.py", line 68, in _pseudo_sync_runner
      coro.send(None)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 3058, in run_cell_async
      interactivity=interactivity, compiler=compiler, result=result)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 3249, in run_ast_nodes
      if (await self.run_code(code, result,  async_=asy)):
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 3326, in run_code
      exec(code_obj, self.user_global_ns, self.user_ns)
    File "", line 1, in
      model.fit(x_train,steps_per_epoch=len(x_train),validation_data=x_test
,validation_steps=len(x_test),epochs=10)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1409, in fit
      tmp_logs = self.train_function(iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1051, in train_function
      return step_function(self, iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1040, in step_function
      outputs = model.distribute_strategy.run(run_step, args=(data,))
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1030, in run_step
      outputs = model.train_step(data)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 889, in train_step
      y_pred = self(x, training=True)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 490, in __call__
      return super().__call__(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/base_layer.py
", line 1014, in __call__
      outputs = call_fn(inputs, *args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 92, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/sequential.py
", line 374, in call
      return super(Sequential, self).call(inputs, training=training, mask=m
ask)
```

```
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/functional.py
", line 459, in call
      inputs, training=training, mask=mask)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/functional.py
", line 596, in _run_internal_graph
      outputs = node.layer(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/base_layer.py
", line 1014, in __call__
      outputs = call_fn(inputs, *args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 92, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/layers/reshaping/fla
tten.py", line 98, in call
      return tf.reshape(inputs, flattened_shape)
Node: 'sequential/flatten/Reshape'
Input to reshape is a tensor with 12387072 values, but the requested shape
requires a multiple of 127008
         [[{{node sequential/flatten/Reshape}}]] [Op:__inference_train_func
tion_792]
```

In [21]:

```
model.save('vegetabledata.h5')
```

In [22]:

```
import numpy as np
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
```

In [23]:

```
model=load_model('vegetabledata.h5')
```

In [25]:

```
img=image.load_img('/content/drive/MyDrive/Classroom/Dataset Plant
Disease/Veg-dataset/Veg-dataset/train_set/Pepper,_bell___healthy/00208a93-
7687-4e8c-b79e-3138687e0f38___JR_HL 7955.JPG')
```

In [26]:

```
img
```

Out[26]:

In [27]:

```
x=image.img_to_array(img)
```

In [29]:

```
img=image.load_img('/content/drive/MyDrive/Classroom/Dataset Plant
Disease/Veg-dataset/Veg-dataset/train_set/Pepper,_bell___healthy/01468dda-
44f3-4de8-8aed-948bcc29b719___JR_HL 8704.JPG')
img
```

Out[29]:

In [30]:

```
x=image.img_to_array(img)
```

In [31]:

```
x
```

Out[31]:

```
array([[[197., 190., 198.],
        [195., 188., 196.],
        [193., 186., 194.],
        ...,
        [208., 197., 203.],
        [211., 200., 206.],
        [212., 201., 207.]],

       [[195., 188., 196.],
        [191., 184., 192.],
        [187., 180., 188.],
        ...,
        [208., 197., 203.],
        [208., 197., 203.],
        [208., 197., 203.]],

       [[199., 192., 200.],
        [195., 188., 196.],
        [190., 183., 191.],
        ...,
        [212., 201., 207.],
        [209., 198., 204.],
        [209., 198., 204.]],

       ...,
```

```
        [[183., 172., 178.],
         [184., 173., 179.],
         [186., 175., 181.],
         ...,
         [139., 124., 129.],
         [202., 187., 192.],
         [146., 131., 136.]],

        [[182., 171., 177.],
         [183., 172., 178.],
         [184., 173., 179.],
         ...,
         [145., 130., 135.],
         [167., 152., 157.],
         [187., 172., 177.]],

        [[191., 180., 186.],
         [191., 180., 186.],
         [191., 180., 186.],
         ...,
         [211., 196., 201.],
         [173., 158., 163.],
         [160., 145., 150.]]], dtype=float32)
```

In [32]:

```
x=np.expand_dims(x,axis=0)
```

In [33]:

```
x
```

Out[33]:

```
array([[[[197., 190., 198.],
         [195., 188., 196.],
         [193., 186., 194.],
         ...,
         [208., 197., 203.],
         [211., 200., 206.],
         [212., 201., 207.]],

        [[195., 188., 196.],
         [191., 184., 192.],
         [187., 180., 188.],
         ...,
         [208., 197., 203.],
         [208., 197., 203.],
         [208., 197., 203.]],

        [[199., 192., 200.],
         [195., 188., 196.],
         [190., 183., 191.],
         ...,
         [212., 201., 207.],
         [209., 198., 204.],
         [209., 198., 204.]],

        ...,

        [[183., 172., 178.],
         [184., 173., 179.],
```

```
         [186., 175., 181.],
         ...,
         [139., 124., 129.],
         [202., 187., 192.],
         [146., 131., 136.]],

        [[182., 171., 177.],
         [183., 172., 178.],
         [184., 173., 179.],
         ...,
         [145., 130., 135.],
         [167., 152., 157.],
         [187., 172., 177.]],

        [[191., 180., 186.],
         [191., 180., 186.],
         [191., 180., 186.],
         ...,
         [211., 196., 201.],
         [173., 158., 163.],
         [160., 145., 150.]]]], dtype=float32)
```

In [41]:

```
y=np.expand_dims(x,axis=0)
```

In [35]:

```
y=np.argmax(model.predict(x),axis = 1)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
 in
----> 1 y=np.argmax(model.predict(x),axis = 1)

/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py in er
ror_handler(*args, **kwargs)
     65     except Exception as e:  # pylint: disable=broad-except
     66       filtered_tb = _process_traceback_frames(e.__traceback__)
---> 67       raise e.with_traceback(filtered_tb) from None
     68     finally:
     69       del filtered_tb

/usr/local/lib/python3.7/dist-packages/keras/engine/training.py in tf__pred
ict_function(iterator)
     13                 try:
     14                     do_return = True
---> 15                     retval_ = ag__.converted_call(ag__.ld(step_func
tion), (ag__.ld(self), ag__.ld(iterator)), None, fscope)
     16                 except:
     17                     do_return = False

ValueError: in user code:

    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1845, in predict_function  *
        return step_function(self, iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1834, in step_function  **
        outputs = model.distribute_strategy.run(run_step, args=(data,))
```

```
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1823, in run_step  **
        outputs = model.predict_step(data)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1791, in predict_step
        return self(x, training=False)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 67, in error_handler
        raise e.with_traceback(filtered_tb) from None
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/input_spec.py
", line 264, in assert_input_compatibility
        raise ValueError(f'Input {input_index} of layer "{layer_name}" is '

    ValueError: Input 0 of layer "sequential" is incompatible with the laye
r: expected shape=(None, 128, 128, 3), found shape=(None, 256, 256, 3)
```

In [36]:

```
x_train.class_indices
```

Out[36]:

```
{'Pepper,_bell___Bacterial_spot': 0,
 'Pepper,_bell___healthy': 1,
 'Potato___Early_blight': 2,
 'Potato___Late_blight': 3,
 'Potato___healthy': 4,
 'Tomato___Bacterial_spot': 5,
 'Tomato___Late_blight': 6,
 'Tomato___Leaf_Mold': 7,
 'Tomato___Septoria_leaf_spot': 8}
```

In [37]:

```
index=['Pepper,bell_Bacterial_spot','Pepper,_bell_healthy','Potato_Early_bl
ight','Potato__Late_blight']
```

In [42]:

```
index[y[0]]
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
 in
----> 1 index[y[0]]

TypeError: only integer scalar arrays can be converted to a scalar index
```

In [40]:

```
img=image.load_img('/content/drive/MyDrive/Classroom/Dataset Plant
Disease/Veg-dataset/Veg-dataset/train_set/Pepper,_bell___healthy/0119205b-
cfac-4322-be37-dcc401fcfa11___JR_HL 8527.JPG')
x=image.img_to_array(img)
x=np.expand_dims(x,axis=0)
y=np.argmax(model.predict(x),axis=1)
index=['Pepper,_bell_Bacterial_spot','Pepper,_bell_healthy','Potato_Early_b
light','Potato_Late_blight','Potato_healthy','Tomato_Bacterial_spot','Tomat
o_Leaf_Mold','Tomato__Septoria_leaf_spot']
index[y[0]]
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
 in
      2 x=image.img_to_array(img)
      3 x=np.expand_dims(x,axis=0)
```

```
----> 4 y=np.argmax(model.predict(x),axis=1)
      5 index=['Pepper,_bell_Bacterial_spot','Pepper,_bell_healthy','Potato
_Early_blight','Potato_Late_blight','Potato_healthy','Tomato_Bacterial_spot
','Tomato_Leaf_Mold','Tomato__Septoria_leaf_spot']
      6 index[y[0]]

/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py in er
ror_handler(*args, **kwargs)
     65     except Exception as e:  # pylint: disable=broad-except
     66       filtered_tb = _process_traceback_frames(e.__traceback__)
---> 67       raise e.with_traceback(filtered_tb) from None
     68     finally:
     69       del filtered_tb

/usr/local/lib/python3.7/dist-packages/keras/engine/training.py in tf__pred
ict_function(iterator)
     13                 try:
     14                     do_return = True
---> 15                     retval_ = ag__.converted_call(ag__.ld(step_func
tion), (ag__.ld(self), ag__.ld(iterator)), None, fscope)
     16                 except:
     17                     do_return = False

ValueError: in user code:

    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1845, in predict_function  *
        return step_function(self, iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1834, in step_function  **
        outputs = model.distribute_strategy.run(run_step, args=(data,))
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1823, in run_step  **
        outputs = model.predict_step(data)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1791, in predict_step
        return self(x, training=False)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 67, in error_handler
        raise e.with_traceback(filtered_tb) from None
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/input_spec.py
", line 264, in assert_input_compatibility
        raise ValueError(f'Input {input_index} of layer "{layer_name}" is '

    ValueError: Input 0 of layer "sequential" is incompatible with the laye
r: expected shape=(None, 128, 128, 3), found shape=(None, 256, 256, 3)
```

In [ ]: